

國 立 清 華 大 學 命 題 紙

97 年度工業工程與工程管理學系 (所) _____ 丙 _____ 組碩士班入學考試

科目 人因工程 科目代碼 1602 共 _____ / 頁第 _____ / 頁 *請在【答案卷卡】內作答

註：不得使用計算器；滿分 100 分。

1. (15%) If the terms “human factors” and “ergonomics” are considered having the same meaning, please answer the followings:
 - a. Give a concise definition to either the term.
 - b. What are main objectives of the discipline?
 - c. What is the main emphasis for this discipline, which differs from other engineering branches?
2. (15%) Please give five circumstances when auditory displays are more appropriately used for information presentation. Please also indicate why it is appropriate in each case.
3. (20%) When designing a manual control interface on a mechanical and electronic device, what types of “compatibility” should be considered in order to be considered as an ergonomically designed device? Please name the types of compatibility and explain the meaning of each type of compatibility with appropriate example(s).
4. (5% each) Explain the following terms:
 - (1) Lamp efficacy
 - (2) Clo unit
 - (3) Equivalent sound level (L_{eq})
 - (4) TTS_2
5. (5% each) Short answers:
 - (1) How to specify a medium gray color chip and a pure red color chip in Munsell notation?
 - (2) Write out the 10 central frequencies of octave band as defined by ANSI (American National Standard Institute).
 - (3) If you are asked to design a traffic signal, you are allowed to used three coding methods redundantly, what three kinds of coding methods will you use?
 - (4) Write out five principles in the design of hand tools.
 - (5) There are seven sound sources, each is 44 dBA, 38 dBA, 74 dBA, 74 dBA, 77 dBA, 60 dBA, 80 dBA if each is measured independently, what is the SPL if all of them sound altogether?
 - (6) To determine a surface height for sitting work or standing work, what is the most important anthropometric measurement should be the reference?